UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/560,099	01/29/2007	Christine Rademacher	P02074US2A	9529

7590 02/22/2010

Bridgestone Americas Holding Inc
Chief Intellectual Property Counsel
1200 Firestone Parkway
Akron, OH 44317-0001

EXAMINER	
BOYLE, ROBERT C	

ART UNIT	PAPER NUMBER
1796	

MAIL DATE	DELIVERY MODE
02/22/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/560,099	RADEMACHER ET AL.	
	Examiner	Art Unit	
	ROBERT C. BOYLE	1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 January 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12 and 21-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12, 21-34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. The new grounds of rejection set forth below are necessitated by applicant's amendment filed on 1/4/2010. In particular, claim claims 31-32 have been amended to rectify an indefinite issue and claims 33-34 have been added. New rejections have been added to address these claims. However, no new prior art references have been applied. Thus, the following action is properly made FINAL.

Claim Rejections - 35 USC § 112

3. The 112 rejections of claims 31-32 presented in the previous Office Action have been withdrawn in view of the amendments made.

4. Claims 31-32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5. Applicant's response to the 112 rejection presented in the previous Office Action for issues regarding the clarifying the isocyanate alkoxysilane is recognized, but in making a responsive amendment another new issue has been precipitated. Claims 31-32 recite: "where A is oxygen or sulfur, A=C=N- is an isocyanate group". However, if A is a sulfur group, then A=C=N- cannot be an isocyanate group, but would be an isothiocyanate group. Because the scope of the claim is unclear as to whether sulfur atoms are present or not, claims 31-32 are indefinite.

Claim Rejections - 35 USC § 102

6. Claims 1-3 and 11-12 are rejected under 35 U.S.C. 102(b) as being anticipated by **Ozawa** (WO 01/34658). The rejection is adequately set forth in paragraphs 8-12 in the office action mailed on 10/1/2009 and is incorporated here by reference.

Claim Rejections - 35 USC § 103

7. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Ozawa**. The rejection is adequately set forth in paragraphs 13-14 in the office action mailed on 10/1/2009 and is incorporated here by reference.

8. Claims 4 and 6-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Ozawa** in view of **Hergenrother** (EP 0 801 078). The rejection is adequately set forth in paragraphs 15-20 in the office action mailed on 10/1/2009 and is incorporated here by reference.

9. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Ozawa** and **Hergenrother** (EP 0 801 078) in view of **Vitus** (US 4,409,368). The rejection is adequately set forth in paragraphs 21-23 in the office action mailed on 10/1/2009 and is incorporated here by reference.

10. Claims 1-11 and 21-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Schreffler** (US 6,451,935) in view of **Ozawa** (WO 01/34658). The rejection is adequately set

forth in paragraphs 24-33 in the office action mailed on 10/1/2009 and is incorporated here by reference.

11. As to claims 31-32, Ozawa teaches using 3-isocyanatopropyltrimethoxysilane (page 14, lines 3-30).

12. As to claims 33-34, Ozawa teaches the product formed is a polymer reacted at the reactive substituent (pg. 18, ln 1-7) which is an isocyanate group (page 14, lines 3-30). This would have the same structure as claimed.

13. Claims 8-9 and 26-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Schreffler** (US 6,451,935) in view of **Ozawa** (WO 01/34658) and **Hall** (US 5,112,929). The rejection is adequately set forth in paragraphs 34-36 in the office action mailed on 10/1/2009 and is incorporated here by reference.

14. Claims 8-10 and 26-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Schreffler** (US 6,451,935) in view of **Ozawa** (WO 01/34658) and **Vitus** (US 4,409,368). The rejection is adequately set forth in paragraphs 37-39 in the office action mailed on 10/1/2009 and is incorporated here by reference.

Response to Arguments

15. Applicant's arguments filed 1/4/2010 have been fully considered but they are not persuasive.

16. It is noted that a 1.132 Declaration by Terrence Hogan ("Hogan Declaration") was filed on 1/4/2010. This Declaration is found to be not persuasive.

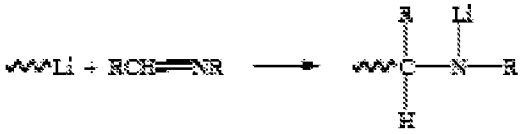
Hogan Declaration

17. The Hogan Declaration argues that the molecule used as a terminating agent in Schreffler is very different from the molecule used in the claimed invention.

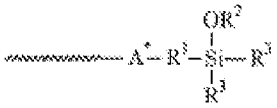
18. The molecules taught by Schreffler include the genus of isocyanates (col. 7, ln. 65-68) and include compounds containing a carbon-nitrogen double bond (col. 3, ln. 38). While Schreffler does not teach the specific isocyanate recited in claim 1, isocyanate alkoxysilane, it is noted that the claimed isocyanate falls within the genus "isocyanates" taught by Schreffler. Additionally, Schreffler contemplates the presence of additional functional groups, including those with silicon atoms (col. 4, ln. 36-39; claim 6). Schreffler does not teach the specific isocyanate alkoxysiloxanes.

19. However, Ozawa teaches adding functionalizing agents of isocyanate siloxanes and isothiocyanate siloxanes, such as 3-isocyanatopropyltrimethoxysilane, to styrene/butadiene pseudo-living polymers (abstract; page 14, ln. 3-30).

20. While Ozawa uses a lanthanide based catalysts instead of anionic based polymerization, both references contemplate the same functionalization occurring: reacting the reactive polymer with the carbon-nitrogen end group:



Schreffler



Ozawa

21. Note that the A* of Ozawa is analogous to the substituents which has undergone the addition reaction, principally, the OCN- group (see page 14 of Ozawa, formula VIII).

22. The Hogan Declaration argues that the presence of alkoxysilyl groups in the functionalizing agent would lead to unpredictable results when reacted with anionic living polymers because the alkoxysilyl groups can act as leaving groups.

23. Assuming that the Hogan Declaration is correct in that alkoxysilyl groups act as leaving groups in the presence of anionic living polymers, this does not necessitate a finding of unpredictability.

24. Rather, given two possible reaction mechanisms, reaction at the isocyanate functional group or reaction at the alkoxysilyl functional group, it would have been reasonable to expect the reaction to occur at the isocyanate group because Schreffler teaches reaction of anionic living polymers with isocyanates (col. 7, ln. 65-68) and compounds with carbon-nitrogen double bonds (col. 3, ln. 38).

25. Furthermore, one of ordinary skill in the art would recognize that several factors are involved in determining competing reactions, such as quantity of reactants, thermal stability, and rates of reaction. Data establishing that the reaction of anionic living polymers with alkoxysilyl groups is faster or more stable than the reaction with isocyanate groups would lend weight to applicant's arguments. Furthermore, it is well within the abilities of one of ordinary skill in the art to manipulate experimental factors such as temperature and concentration to favor one reaction over another competing reaction.

26. Because Schreffler teaches isocyanates react with anionic living polymers, this gives one of ordinary skill in the art reasonable predictability on the addition of the isocyanates of Ozawa.

27. The Hogan Declaration argues that the term “anionically polymerized polymer" defines a unique polymer structure that cannot be obtained by other polymerization techniques. It is assumed that this argument applies to the rejections applying Ozawa as a primary reference as Schreffler teaches anionically polymerized living polymers.

28. While it is noted that the method of polymerization affects the microstructure of the polymer, giving different amounts of cis-structures or vinyl structures, these differences are described as trends by the Hogan declaration using the terms “generally" and “typically” on pg. 4, ¶ 15-16. This amounts to a lack of specificity in a structural definition and would lead to an indefiniteness of scope if applied as a structural definition.

29. Furthermore, it is noted that the Hogan Declaration states that polymers formed by lanthanide catalysts have a vinyl content lower than 10% (¶ 15) and anionic polymerization cannot provide a vinyl content below 8%. This describes a range that overlaps. Additionally, the Hogan Declaration states that polymers formed by lanthanide catalysts generally have a cis content in excess of 70% and anionic polymerization typically have a cis content below 50% which can be manipulated within reasonable ranges. It is unclear how broad a range a 'reasonable range' covers. In the absence of guidance, a reasonable range might overlap a range above 70%, leading to situations in which a polymer formed by lanthanide catalysts has the same structure as a polymer formed by anionic polymerization.

30. It is noted that claims 8-10, 26-28 recite limitations regarding the microstructure of the polymer. However, these claims are not rejected by Ozawa alone.

Remarks

31. Applicant argues that the process in the product by process describes a unique structure. This is not persuasive. It has not been shown or asserted that anionic living polymers always have a structure different than polymers formed by lanthanide based catalyst (see above discussion). Furthermore, the scopes of the microstructures of polymers formed by lanthanide catalysts and the scopes of microstructures of polymers formed by anionic polymerization have not been adequately defined.

32. Applicant argues that there is no teaching or suggestion to combine Schreffler with Ozawa. This is not persuasive.

33. It would have been obvious to use the isocyanate alkoxysilanes of Ozawa with the polymers of Schreffler because both references teach the endcapping functionalization of styrene/diene polymers with isocyanates and Ozawa teaches polymers carrying the alkoxy silane functionality may couple via a condensation reaction and improve the cold flow resistance of the polymer (Ozawa: page 18, line 21-page 19, line 2) and using an isocyanate alkoxysilane such as 3-isocyanatopropyltriethoxysilane ("IPMOS") results in a higher elongation at break and ML1+4@ 100°C when used with $ZnCl_2$ (Ozawa: Table V).

34. Applicant argues that when the level of ordinary skill in the art is properly considered, the terminating agents taught by Ozawa are not predictably transferred to terminate anionically polymerized polymers as taught by Schreffler. This is not persuasive.

35. Applicant's arguments place the level of ordinary skill in the art too high. Applicant relies on the expertise of the Hogan Declaration for this level of skill, where Dr. Hogan has a Ph.D. in chemistry, at least 12 years experience, and is a Section Manager of Polymer Synthesis. Based on his experience in the field of living polymerizations, Dr. Hogan would realize the different reactivities of various functional groups with different living polymerizations. However, it is the examiner's position that one of ordinary skill in the art would not have realized that Ozawa used lanthanide systems with alkoxysilyl groups because of the lack of reactivity between lanthanide systems and alkoxysilyl groups or that aninionic living polymers would preferentially react with alkoxysilyl groups over isocyanate groups. Rather, one of ordinary skill would take the teaching of Ozawa, where a pseudo-living polymer reacts at the isocyanate functionality, and apply it to Schreffler, reasonably expecting the same result.

36. Applicant argues that the multiple functionalities have the ability to change the overall reactivity of the molecules and the manner in which they react with the polymers. This is not persuasive (see above discussion).

Conclusion

37. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROBERT C. BOYLE whose telephone number is (571)270-7347. The examiner can normally be reached on Monday-Thursday, 9:00AM-5:00PM Eastern.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (571)272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ROBERT C BOYLE/
Examiner, Art Unit 1796

/Vasu Jagannathan/
Supervisory Patent Examiner, Art Unit 1796